

29-37

33.

$$16x^2y - 8xy + y$$

27
9.3

$$y(16x^2 - 8x + 1)$$

$$y(4x - 1)(4x - 1)$$

$$-4x \checkmark$$

$$-4x$$

$$y(4x - 1)^2$$

$$16x^2y \rightarrow 2 \cdot 2 \cdot 2 \cdot 2 \cdot x \cdot x \cdot y$$

$$-8xy \rightarrow -1 \cdot 2 \cdot 2 \cdot 2 \cdot x \cdot y$$

$$y \rightarrow y$$

$$GCF \rightarrow y$$

37.

$$x^3y - 9xy^3$$

$$xy(x^{\textcircled{2}} - 9\underline{y}^{\textcircled{2}})$$

$$xy(x + 3y)(x - 3y)$$

$$x^3y \Rightarrow x \cdot x \cdot \boxed{x \cdot y}$$

$$-9xy^3 \Rightarrow -1 \cdot 3 \cdot 3 \cdot \boxed{x \cdot y \cdot y \cdot y}$$

$$\text{GCF} \Rightarrow xy$$

$$6x^2 + 48x + 72$$

$$6(x^2 + 8x + 12)$$

$$6(x + 2)(x + 6)$$

+
~~6x~~
~~2x~~ ✓

$$6x^2 \rightarrow 2 \cdot 3 \cdot x \cdot x$$

$$48x \rightarrow 2 \cdot 2 \cdot 2 \cdot 2 \cdot 3 \cdot x$$

$$72 \rightarrow 2 \cdot 2 \cdot 2 \cdot 3 \cdot 3$$

$$GCF \rightarrow 2 \cdot 3 = 6$$

$$x^2 - 1$$

$$(x+1)(x-1)$$

Difference
of
Two
Squares

$$x^3 - 1$$

$$x^4 - 1$$

$$x^2 - 1$$

$$x^3 - 1$$
$$(x^2 + 1)(x - 1)$$

$$x^3 - x^2 + x - 1$$

$$x^3 - 1$$

$$(x-1)(x-1)(x-1)$$

$$(x-1)(x^2 - \underline{x} - \underline{x} + 1)$$

$$(x-1)(x^2 - 2x + 1)$$

$$x^3 - 2x^2 + x - x^2 + 2x - 1$$

$$x^3 - 1$$

$$(x - 1)(x^2 + x + 1)$$

$$x^3 + \cancel{x^2} + \cancel{x} - \cancel{x^2} - \cancel{x} - 1$$

$$x^3 - 1$$

$$x^3 - 8$$
$$(x-2)(x^2 + 2x + 4)$$

$$x^{\textcircled{3}} - 125$$

$$(x - 5)(x^2 + 5x + 25)$$

Difference of
Two Cubes

$$8x^3 - 125$$

$$(2x - 5)(4x^2 + 10x + 25)$$

$$-20x^2 + 20x^2 + 50x - 50x$$

$$8x^{\textcircled{3}} - 125$$

$5^{\textcircled{3}}$

$$(2x - \textcircled{5})(4x^2 + \textcircled{10}x + 25)$$

$$-20x^2 + 50x$$

$$x^4 - 1$$

$$x^{\textcircled{2}} + 1$$

$$x^{\textcircled{3}} + 1$$

p. 32 41, 42

$$x^4 - 1$$

$$(x^2 + 1)(x^2 - 1)$$

$$\begin{array}{r} -1x^2 \\ \underline{1x^2} \end{array}$$

$$(x^2 + 1)(x^2 - 1) \leftarrow \text{factors again}$$

$$(x^2 + 1)(x + 1)(x - 1)$$

Factor completely

$$x^2 \oplus 1$$

~~$$(x+1)(x-1)$$~~

~~$$(x-1)(x-1)$$~~

$$\begin{array}{r} -1x \\ -1x \end{array}$$

~~$$(x+1)(x+1)$$~~

$$\begin{array}{r} 1x \\ 1x \end{array}$$

~~$$(x+1)(-x+1)$$~~

~~$$(-x+1)(-x+1)$$~~

$$\begin{array}{r} -1x \\ -1x \end{array}$$

$$(x+1)(x^2$$

Can't
be
done

$$x^2 - 1$$

$$(x - 1)(x + 1)$$

$$x^{\textcircled{3}} + 1$$

$$(x^{\textcircled{+}} + 1)(x^2 - x + 1)$$

$$\cancel{1x^2 - x^2}$$

$$x^2 - 1$$

$$(x^{\ominus} - 1)(x^{\oplus} + 1)$$

$$r^{\textcircled{3}} - t^{\textcircled{3}}$$

$$(r-t)(r^2 - r + t^2)$$

$$r^3 - r^2 + t^2 r - tr^2 + rt - t^3$$

$$r^3 - t^3$$

$$(r-t)(r^2 + r - t^2)$$

$$r^3 + r^2 - rt^2 - tr^2 - rt + t^3$$

$$r^3 - t^3$$

$$(r-t)(r^2 + rt + t^2)$$

$$~~-tr^2 + r^2t~~$$



$$x^3 - 8$$

$$(x - 2)(x^2 + 2x + 4)$$

$$r^3 - t^3$$

$$(r - t)(r^2 + rt + t^2)$$

$$m^3 - 27$$

$$(m - 3)(m^2 + 3m + 9)$$

$$m^3 + 27$$

$$(m + 3)(m^2 - 3m + 9)$$

$$m^3 + n^3$$
$$(m+n)(m^2 - mn + n^2)$$

Multiply Fractions

① Common denominator

② Multiply across then reduce

$$\frac{3}{4} \cdot \frac{8}{9} = \frac{24}{36} = \frac{2}{3}$$

③

$$\frac{3}{4} * \frac{8}{9} = \frac{2}{3}$$

divide out